CLAIMS

1. A method of producing a neuroblast *in vitro*, the method comprising culturing a neuronal cell in a vessel in a serum-free basal media supplemented with at least one trophic factor wherein a surface in the vessel allows attachment of the neuronal cell.

2. The method of claim 1, wherein the neuronal cell is derived from neural tissue selected from the group consisting of hippocampus, cerebellum, spinal cord, cortex, striatum, basal forebrain, ventral mesencephalon, and locus ceruleus.

3. The method of claim 1, wherein the trophic factor is selected from the group consisting of nerve growth factor, brain derived neurotrophic factor, neurotrophin, fibroblast growth factor, platelet derived growth factor, epidermal growth factor, insulin growth factor, and transforming growth factor.

4. The method of claim 3, wherein the fibroblast growth factor is basic fibroblast growth factor.

5. The method of claim 3, wherein the neurotrophin is neurotrophin-3.

6. The method of claim 1, wherein the surface in the vessel is treated with a polybasic amino acid to allow attachment of the neuronal cell.

7. The method of claim 6, wherein the polybasic amino acid is polyornithine.

8. The method of claim 1, wherein the surface in the vessel is treated with an extracellular matrix molecule to allow attachment of the neuronal cell.

9. The method of claim 8, wherein the extracellular matrix molecule is selected from the group consisting of laminin, collagen and fibronectin.

10. The method of claim 1, wherein the neuronal cell is cultured in serum-containing media prior to culture in serum-free media.

11. A method for identifying a composition which affects a neuroblast which comprises:

(a) incubating components comprising the composition and the neuroblast, wherein the incubating is carried out under conditions sufficient to allow the components to interact; and

(b) measuring the effect on the neuroblast caused by the composition.

12. The method of claim 11, wherein the effect is inhibition of the neuroblast.

13. The method of claim 11, wherein the effect is stimulation of the neuroblast.

14. The method of claim 11, wherein the neuroblast is derived from neural tissue selected from the group consisting of hippocampus, cerebellum, spinal cord, cortex, striatum, basal forebrain, ventral mesencephalon, and locus ceruleus.

15. The method of claim 11, wherein the neuroblast is immortalized.

16. The method of claim 15, wherein the neuroblast is immortalized by the introduction to the neuroblast of at least one oncogene.

17. The method of claim 15, wherein the oncogene is selected from the group consisting of v-myc, SV40 large T antigen and adenovirus E1A.

18. The method of claim 11, wherein the neuroblast further comprises at least one exogenous gene.

19. The method of claim 18, wherein the exogenous gene encodes a receptor.

20. The method of claim 19, wherein the receptor is selected from the group consisting of receptors which bind adrenaline, noradrenaline, glutamate, serotonin, dopamine, GABA, and acetylcholine.

21. A culture system useful for the production and maintenance of a neuroblast comprising:

(a) a serum-free basal media containing at least one trophic factor; and

(b) a vessel, wherein a surface in the vessel allows attachment of the neuroblast.

22. The culture system of claim 21, wherein the neuroblast is derived from neural tissue selected from the group consisting of hippocampus, cerebellum, spinal cord, cortex, striatum, basal forebrain, ventral mesencephalon, and locus ceruleus.

23. The culture system of claim 21, wherein the trophic factor is basic fibroblast growth factor.

24. The culture system of claim 21, wherein the trophic factor is present at a concentration of from about 1 ng/ml to about 100 ng/ml.

25. The culture system of claim 21, wherein the trophic factor is present at a concentration of from about 5 ng/ml to about 70 ng/ml.

26. The culture system of claim 21, wherein the trophic factor is present at a concentration from about 15 ng/ml to about 60 ng/ml.

27. The culture system of claim 21, wherein the glucose is present at a concentration from about 0.01% to about 1.5%.

28. The culture system of claim 21, wherein the glucose is present at a concentration from about 0.1% to about 0.6%.

29. The culture system of claim 21, wherein the surface in the vessel is treated with a polybasic amino acid.

30. The culture system of claim 29, wherein the polybasic amino acid is polyornithine.

31. The culture system of claim 21, wherein the surface in the vessel is treated with an extracellular matrix molecule.

32. The culture system of claim 31, wherein the extracellular matrix molecule is selected from the group consisting of laminin, collagen, and fibronectin.

33. A method of treating a subject with a neuronal cell disorder comprising administering to the subject a therapeutically effective amount of neuroblast.

34. The method of claim 33, wherein the neuroblast contains an exogenous gene.

35. The method of claim 34, wherein the exogenous gene encodes an oncogene.

36. The method of claim 35, wherein the oncogene is selected from the group consisting of v-myc, SV40 large T antigen and adenovirus E1A.

37. The method of claim 34, wherein the exogenous gene encodes a receptor.

38. The method of claim 37, wherein the receptor is selected from the group consisting of receptors which bind adrenaline, noradrenaline, glutamate, serotonin, dopamine, GABA, and acetylcholine receptor.

39. The method of claim 34, wherein the exogenous gene encodes a ligand.

40. The method of claim 39, wherein the ligand is selected from the group consisting of adrenaline, noradrenaline, glutamate, dopamine, acetylcholine, gamma-aminobutyric acid, and serotonin.

41. The method of claim 33, wherein the neuronal disorder is selected from the group consisting of Alzheimer's disease, Parkinson's disease, Huntington's disease, stroke, and spinal cord damage.

42. A cellular composition comprising an enriched population of neuroblast cells.

43. The composition of claim 42, wherein the neuroblast is derived from neural tissue selected from the group consisting of hippocampus, cerebellum, spinal cord, cortex, striatum, basal forebrain, ventral mesencephalon, and locus ceruleus.

44. The composition of claim 42, wherein the neuroblast is immortalized.

45. The composition of claim 44, wherein immortalization is achieved by the introduction to the cell of at least one oncogene.

46. The composition of claim 45, wherein the oncogene is selected from the group consisting of v-myc, SV40 large T antigen and adenovirus E1A.

47. The composition of claim 42, wherein the neuroblast further comprises at least one exogenous gene.

48. The composition of claim 47, wherein the exogenous gene encodes a receptor.

49. The composition of claim 48, wherein the receptor is selected from the group consisting of receptors which bind adrenaline, noradrenaline, glutamate, serotonin, dopamine, GABA, and acetylcholine.

50. The composition of claim 47, wherein the exogenous gene encodes a ligand.

51. The composition of claim 50, wherein the ligand is selected from the group consisting of adrenaline, noradrenaline, glutamate, dopamine, acetylcholine, gamma-aminobutyric acid, and serotonin.